

12/6/17 "Motivation gets you started, habit keeps you going."-Jim Rohn

HW: "2017 A2 CC1 Rational Expressions (Equations)" finish

AIM: How do we solve Rational Equations?

Warm Up:

a) Express in simplest form: b) Show how you can rewrite $\frac{11x}{6-x}$

$$\frac{x-4}{4-x} = -1$$

$$\frac{11x}{-1(-6+x)} = \frac{11x}{-1(x-6)} = \frac{11x}{-1(x-6)}$$

$$= \frac{11x}{-(x-6)} = \frac{-11x}{x-6}$$

$$\frac{5^{(5-x)}}{x-5} + \frac{3^{(x-5)}}{5-x}$$

$$\frac{25-5x}{(x-5)(5-x)} + \frac{3x-15}{(x-5)(5-x)}$$

$$\frac{5}{x-5} + \frac{-3}{x-5} = \frac{2}{x-5}$$

$$\frac{2(5-x)}{(x-5)(5-x)} = \frac{2}{x-5}$$

$$\frac{1}{-2} = \frac{-1}{2}$$

$$1 + x = 7$$

$$\frac{\cancel{2x}^1}{\cancel{2x}_3} + \frac{1}{x} \frac{\cancel{6}}{\cancel{6}} = \frac{1}{2} \frac{\cancel{3x}}{\cancel{3x}} \quad \text{LCD: } 3 \cdot x \cdot 2 = 6x$$

$$\checkmark \quad \frac{2x}{6x} + \frac{6}{6x} = \frac{3x}{6x} \Rightarrow \begin{array}{r} 2x + 6 = 3x \\ -2x \quad -2x \\ \hline 6 = x \end{array}$$

STEPS:

- 1) Find the LCD (factor first if necessary)
- 2) Rewrite the entire equation so that all of the denominators are the same (LCD).
- 3) Solve the equation in the numerators (ignore the denominator)
- 4) Check to see that the solution does not make any of the fractions undefined.

$$2) \frac{x+9}{2x} + 3 = \frac{15}{x} \quad \text{LCD: } 2x$$

$$\frac{x+9}{2x} + \frac{6x}{2x} = \frac{30}{2x}$$

$$\begin{array}{r} x+9+6x=30 \\ -9 \quad -9 \\ \hline x+6x=21 \\ 7x=21 \\ \frac{7x}{7} = \frac{21}{7} \end{array}$$

$$x=3$$

$$3) \frac{(6)x-6}{(6)x} - \frac{1}{6} = \frac{4}{x} \quad \text{LCD: } 6x$$

$$\frac{6x-36}{6x} - \frac{x}{6x} = \frac{24}{6x}$$

$$6x-36-x=24$$

$$5x-36=24$$

$$\begin{array}{r} +36 \quad +36 \\ \hline 5x = 60 \\ \frac{5x}{5} = \frac{60}{5} \end{array}$$

$$x=12$$

$$4) \frac{1 \overset{(h-1)}{\cancel{h+1}} \cdot 1 \overset{(h+1)}{\cancel{h-1}} \cdot 2}{h^2 - 1}$$

$(h-1)(h+1)$

LCD:
 $(h-1)(h+1)$

$$\frac{h-1}{(h-1)(h+1)} + \frac{h+1}{(h-1)(h+1)} = \frac{2}{(h-1)(h+1)}$$

$$h-1 + h+1 = 2$$

$$\frac{2h}{2} = \frac{2}{2}$$

~~$h=1$~~
 reject
 b/c

it makes
 a denominator
 equal to 0.

9) Solve for J in terms of F and W .

$$LCD = JWF$$

$$\frac{WF}{JWF} + \frac{JF}{WJF} = \frac{JW}{FJW}$$

$$\frac{WF}{JWF} + \frac{JF}{JWF} = \frac{JW}{JWF}$$

$$\begin{array}{r} WF + JF = JW \\ -JF \quad -JF \\ \hline \end{array}$$

$$WF = JW - JF$$

$$\frac{WF}{W-F} = \frac{J(W-F)}{W-F}$$

$$J = \frac{WF}{W-F}$$

$$\begin{array}{r} 36 + 6J = 7J \\ -6J \quad -6J \\ \hline \end{array}$$